DATE	CHRONOLOGICAL HISTORY OF THE GEORGETOWN SITE
	History of Steam Plant Operations
1906	The Georgetown Steam Plant was built by the Seattle Electric Company on 18 acres of land on the east bank of the Duwamish River. The river provided a source of cooling water for the condensers and was convenient for discharging waste water.
1912	Seattle Electric Company was purchased by Puget Sound Power and Light; the plant was used very infrequently.
1918-1946	The plant was converted from coal fired boilers to steam-atomized oil-fired furnaces. Fuel storage tanks were also installed during this period.
1930s	The Duwamish was diverted to its present location. The plant's discharge tunnel was extended from the plant to the Duwamish Waterway and is now know as the Georgetown flume. A pumping station was also built on the bank of the new waterway to supply water to the plant.
1951*	Seattle City Light (SCL) purchased the plant from Puget Power.
1964	Last full-scale production run at the plant. A final operational test of turbine 1 was conducted in 1972 and of turbines 2 and 3 in 1974.
1971-1977	The plant was maintained as a "cold standby" facility to supply regional power in emergency situations. The City of Seattle received credits from the Bonneville Power Administration for maintaining the plant in operating condition. Periodic operational tests of the plant's boilers and turbines were conducted during this period.
1978	The plant was decommissioned.
1981	The plant was designated a National Historic Landmark.
	Discovery of Environmental Contamination at the Site
1982-1983	METRO and EPA studies of sediments dredged from Slip #4 on the Duwamish Waterway revealed relatively high levels of PCB contamination. Three sources were identified: the Georgetown flume, CSO/SD 117 and a Boeing storm drain outfall.
1984	SCL initiated an independent sampling program to identify the source(s) of PCB contamination in the flume. Areas suspected of being contaminated due to historical use were sampled first. These sites included the blow down channel, catch basin and drainage ditch areas, the discharge tunnel and the flume. Adjacent property owned by Boeing and used as a fire practice area was also sampled by Boeing. These sample results are unknown.

1984-con't.

March

Phase I

Soil samples were collected around 3 underground storage tanks. A composite sample was collected from the catch basin (pond). The catch basin composite showed a PCB concentration of 500 ppm.

Phase II

August

Soil samples were collected from the catch basin (pond), drainage ditch areas and old boiler blowdown channel. Results showed PCB levels up to 1660 ppm in catch basin soils; the blowdown channel was eliminated as a possible source of PCB contamination since no PCBs were detected there.
(WO 84-4)

Phase III

October

Water and sediment samples were collected from the discharge tunnel and flume. The PCB content of composite samples ranged from .00034 ppm at Slip #4 to 36.7 ppm at the flume head. All water samples contained < 1 ppm PCB.
(WO 84-6)

Phase IV

November

Additional sediment samples were collected along the flume in a joint sampling effort conducted by Raven, Lauck, and METRO. Sediments near the flume head and tunnel mouth were highly contaminated; PCB levels ranged from 1095 to 2520 ppm. PCB levels decreased to <100 ppm in sediments downstream of the flume head.
(WO 84-9)

Conclusions

Study results proved that the stream plant was not a source of PCB contamination. It was also discovered that sediments did not migrate down the tunnel from the plant's condenser pits. Instead it was shown that sediments entered the tunnel from the flume head during high tide periods. Sediments that collect in the flume eventually migrate down the flume to Slip #4. Catch basin sediments and local runoff were identified as the sources of PCB contamination found in the flume.

Site Cleanup and Monitoring

1985

SCL conducted more extensive sampling to define the extent of PCB contamination discovered in 1984 on steam plant property and in the flume.

March

Samples transects were collected at various depths from the catch basin area; PCB concentrations ranged from 91,000 ppm to 7.7 ppm. Sampling data suggested that a single large spill, rather than progressive build up of PCBs due to operation of the steam plant, was responsible for the contamination.
(WO 85-6)

1985	
October	SCL developed a cleanup plan to remove PCB contaminated soils from the catch basin area , sediments from the flume, and debris from Boeing's North Field storm sewer system. The plan was approved by EPA and DOE.
November*	All soils above 10 ppm in the catch basin area were excavated during the cleanup performed by Northwest Enviroservice. Sediments along the entire length of the flume were removed and illegal outfalls were sealed. The Boeing storm sewer system was also flushed clean. Cleanup verification sampling was conducted by AB Consulting. PCB wastes were shipped to the Chem Waste disposal facility in Arlington, Oregon. The catch basin area was covered over with clean fill dirt.
December	A final cleanup report documenting cleanup actions was submitted to SCL by AB Consulting. The flume continued to be used as a discharge channel by Boeing under a permit issued by SCL. The flume also continued to serve as a de facto storm runoff channel for the surrounding Georgetown area.
1986	No significant events occurred at the site during 1986.
1987	SCL examined the Georgetown site for possible recontamination. Periodic resampling of the site was required by the DOE following the cleanup performed in 1985.
April	A site investigation discovered an oil spill in the flume head. The origin of the spill was unknown although Boeing was suspected of being responsible. Soil samples were collected from the catch basin and drainage ditch areas; sediments samples were collected at 5 sites along the flume. Fresh flume head sediments contained 123 ppm PCB. Low level PCB contamination (4 - 15 ppm) was also present in drainage ditch soils. (WO 87-5)
May	SCL revoked Boeing's discharge permit.
June	Residual fuel and sludges in fuel oil tanks and soils around the tanks were sampled for PCB content. Tanks included: 1 Bunker C fuel oil concrete tank; 3 steel fuel oil tanks; and 1 steel diesel tank. No PCBs were present in soil samples, however, sludge in the concrete tank contained < 3 pm PCB; residual oil in the diesel tank contained 13 ppm PCB. Note: the 3 fuel oil tanks were sampled in 1980. Oil contained in the tanks at that time contained 7 - 20 ppm PCB. (WO 87-9)

1987- con't.

August — An "Analysis of Historic Sampling Results from the Georgetown Steam Plant and Environs" was compiled by Raven Services. The report recaps SCL activities at the site and concludes that normal plant operations did not contribute to PCB contamination of the flume. (WO 87-10)

September — Boeing rerouted its condenser cooling water discharge to a nearby CSO/SD and sealed the outfall drain leading to the flume.

October — Sediment and water quality tests were conducted at the steam plant condenser pits. Samples were analyzed for PCBs, oil and grease, pH, and conductivity. No PCB contamination was discovered. The pH and conductivity tests showed it is unlikely that tidal flows reach the plant's condenser pits via the flume and tunnel system. (WO 87-12)

Soil core samples were collected around all underground fuel tanks on the Georgetown property. Residual fuel oil was also tested. Samples were analyzed for EP toxic metals, PAHs, total oil and grease, and PCB content. No PCBs were detected in soil samples; residual sludges in 2 t tanks contained <10 ppm PCB. High levels of oil and grease, 35, 690 ppm, were present in all tanks. (WO 87-14)

1988

April — Core samples were collected from soils excavated during the removal of a large, underground concrete fuel tank. TPH levels were <1%); samples were not analyzed for PCBs. (WO 88-7)

July — Sediment samples were collected at 6 sites along the flume; analysis showed that PCB levels in flume head sediments decreased from 123 ppm in 1987 to 14.26 ppm in 1988. However, this data indicates that PCBs continued to enter the flume from an undetermined source(s) following the 1985 cleanup. PCB levels appeared to have decreased after the Boeing outfall drain was sealed in 1987. (WO 88-12)

1989

March — SCL established a quarterly monitoring program to track PCB levels in flume sediments. Monitoring will continue until the flume is permanently closed.

PCB sampling was conducted on the Georgetown Pump station property. The pump station is located on the bank of the Duwamish Waterway. PCB levels were <0.5 ppm. (WO 89-5)

Remaining fuel tanks at the plant were removed.

1989 -con't.

April - December	Sediment and wood core samples were collected at 7 sites along the flume between Myrtle Street and the flume head. During spring quarter the PCB content of flume head sediments increased from 14.26 ppm in 1988 to 28 - 26 ppm in 1989 but decreased to around 10 ppm over the remainder of the year. (WO 89-6; spring, fall, winter)
November	Soils excavated during the removal of 3 fuel tanks were tested for TPH and PCB content. TPH levels ranged from 8.6 - 67,600 mg/kg ; PCB levels were below detection limits. (WO 89-16)
1990	Quarterly monitoring at the 7 sites sampled in 1988 will continue. A new point at Slip #4 will be added to the sampling scheme. (WO 90-6; spring, summer, fall, winter)

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